



EDUCATIONAL ANIMAL GAME FOR KINDERGARTEN

TAN YI WEN

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Faculty of Computer Science and Software Engineering
UNIVERSITI MALAYSIA PAHANG

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EXECUTIVE SUMMARY

With the advancement of digital technology in our world, the paradigm of learning has seen a massive changes with lot of effort and innovation are done in place to promote interactive learning. In this context, game based learning is introduced to promote interactive learning that provides a proper two way communication which is essential in ensuring the intended message is conveyed. Conventional learning materials such as books and newspapers lack interactivity that is essential in engaging as well as motivating students in striving to learn more. The delivery of information and knowledge through those conventional medium is static which requires no interaction or response from user, such scenario triggers a big question of student's understanding regarding the information that he/ she has read. Thus, a newer approach of teaching as well as motivating student in learning more should be introduced. As such, an educational game that demands cognition feedback from student that offers both interactivity and entertainment should be in place to assist the conventional learning material. In addition, with the introduction of an educational game, information and knowledge can be delivered in a crisp, visually powerful manner which could enhance student's understanding while assisting the digestion of information of the respective student.

RINGKASAN EKSEKUTIF

Dengan kemajuan teknologi yang pesat dalam alam digital, perubahan yang besar terhadap paradigma dari segi pembelajaran telah berlaku. Fenomena ini mengalakkan pelbagai usaha mahupun inovasi untuk membentuk suatu paradigma pembelajaran baru yang berorientasikan tema pembelajaran interaktif yang menekankan komunikasi dua hala yang merupakan suatu elemen yang penting dalam memastikan mesej atau pengetahuan tersebut dapat disampaikan. Bahan pembelajaran tradisional seperti buku dan surat khabar tidak dapat memberikan interaksi kepada pelajar yang merupakan inti yang penting dalam mengalakkan pelajar untuk terus berusaha menimba ilmu. Penyampaian ilmu pengetahuan melalui bahan pembelajaran tradisi adalah dalam bentuk statik, penyampaian tersebut tidak dapat memastikan bahawa penyampaian pengetahuan tersebut berkesan. Senario ini dapat diuraikan lagi dengan suatu persoalan besar, adakah pelajar memahami kandungan buku ataupun surat khabar tersebut? Oleh itu, untuk mengatasi masalah tersebut, permainan video yang berorientasikan pembelajaran interaktif mahupun hiburan untuk pelajar untuk membolehkan ilmu pengetahuan tersebut dapat disampaikan secara jelas dan tepat. Kesimpulannya, dengan menggunakan konsep pembelajaran ini, proses pencernaan ilmu dapat dimudahkan untuk pelajar.

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CHAPTER 1: INTRODUCTION

1.1 Project Overview

Playing game is not just for amusement, it also can be used as an entertainment tool. Games can be classify into various type which distinct by the game theme, goals, challenge, rules and interaction. Games generally contain mental neither physical stimulation nor both. Games playing its own role by develop skills practice, performance as an exercise, or serve as educational, simulation, or psychological.^[1] Games fall into set genre such as virtual game for military or occupational training, education game for teaching and learning purpose, artificial intelligence game develop to challenge personal skill, IQ, quick respond when play within the game, role-playing (RPG), real time strategy (RTS) , first person shooters (FPS), massively multiplayer online (MMO) and etc.^[2] Game programming developer has the mission to develop new technology tools and ideas of game that able to fulfill the marketing demands and requires. Playing games is a way for benefits in learning. Challenging game rule such as scoring and awards in order to encourage student play more often by providing the challenging game stage by increase the tasks and complexity. ^[3]

Nowadays, game easily get from many resources such as downloaded or installed via website, app ,android, online playing and so on, it can in the form of payment or free of charge. Games are global, game construct the baring of communication between the particle groups from variety countries while they able to participate in the common game. In addition, games enable to build up confidential of introversion person interact with the world. Besides that, virtual games with contextualized game setting, actions and events will expose gamer with risk that will carry harm in reality world. ^[3] Different games bring different kinds of feedback for user themselves, this feedback depend on how user handle themselves after

playing the game it can be bad or good. Outstanding global Facebook game are Candy Crush, Diamond Dash and etc. Android games famous with Sushi Chop, Mandora, Temple Run, Subway. Guy love online and off line games such as Tower of Saviors, Defense of the Ancients (Dota), Fédération Internationale de Football Association (FIFA) and so on. Games training enable potential users develop in a new way of mindset, improve their literacy, knowledge and skills on the internet. ^[3]

Conventional study material such as books, tuition classes and newspapers causes students lack of the eagerness and motivation to learn more. The delivery information and knowledge through those static conventional study medium which receive none interaction or none response from user, such scenario triggers a big question of student regarding what actually are they learn within study, do they understand. Thus, a new way of teaching matter as well as motivating student in learning more should be introduced. As such, an educational game that demands cognition feedback from student that offers both interactivity and entertainment should be recommend as an educational tool. Education games designed in educational purpose to help student in their learning process by delivery message in a better understanding way. Educational games present board, card and video games in a visual and entertain manner. ^[4] In such condition, students are able to receive the feedback message from the game clearly and better understanding. Various game can be program based on the educational market demand, begin with kindergarten syllabus until secondary school subject such as science, math, chemistry, biology, physic and so on. Education games assisting the digestion of information of the respective student. Whenever there's a new technological innovation, kids learn how to use it more quickly than their parent. ^[5] Thus, the combination of education values and entertainment values proves to be pivotal in today learning environment as visual content as well as interaction in learning make one understand better. In addition, according to 3M Corporation from an online source, "90 % of information transmitted to the brain is visual, and visuals are processed 60,000x faster in the brain than text". ^[6] All work and no play make Jack a dull boy. Other studies suggest that, there is growing evidence that children showed little interest in reading and writing are now acquiring advanced literacy skills through the text-based communication in online video games. ^[8]

1.1.1 Problem Statement

There are a lot of educational games nowadays with mainly focuses on core subject such as mathematics and science. Less attention and interest is given to the animal game. Children only learn animal knowledge via book and video. But those materials lack of interest and don't not fully understand by children. In addition, currently animal game is too complicated. Multiple of games in a section easily confuse the message of deliver. Multi game button confusing user especially for those children within four to six years old will feel difficulties to make their option while playing. Scientific term of description delivery no message for the children. In order to produce a learning environment. Interaction game is essential to accomplish the teaching and learning plan. As such, an educational game that demands cognition feedback from student that offers both interactivity and entertainment should be in place to assist the conventional learning materials with enhance the 3D walkthrough zoo environment, animal animation, games and etc. to assisting the digestion of information of the respective student.

Animal game can be delivery neither mainly focus on entertainment value nor educational value. Seldom games contain both equally values. Both essential values should be combine to bring a whole new idea. In order to present that, game need to be well planning. Multiple section of games confusing. As an example children go to the coloring section to explode the color of animal well another section to have a guess of animal details. The connection of the games is too complicated to understand by child.

No scoring mechanism to attractive children while play the game again and again. Children need some encourages and motivates while they playing the game, scoring is the good suggestion to do so. In addition, video games of increase scores on measures of working memory, critical thinking, and problem solving.^[7] With scoring mechanism, children able to compete with the other in order to improve themselves with the others. Besides that, children's parent identify they child level via the score achieve when playing the game. Young children not easily lost themselves when playing game, they will find the balance side of learning and entertainment through the game.

As such, problems statements for this project are defined as follow:

1. Existing educational animal games nowadays are too complex (interface design with too many button, many selection in one game, text or instruction using difficult scientific term/word).
2. Educational and entertainment part of the game is separated.
3. No scoring mechanism that can motivate user/children to play again.

1.1.2 Objective

The objectives of the research are:

1. To develop an educational animal game this is suitable for children within four to six years old.
2. To combine educational and entertainment part of the game.
3. To develop scoring mechanism as a motivation factor for user to play again.

1.1.3 Scope

The project is designed:

1. User
 - a) Within four to six years old children
 - b) Kindergarten's teacher
 - c) Children's parent
2. System
 - a) 2D and 3D platform
 - 3D Zoo environment(mammal)
 - Animals (rabbit, fox, wolf and lion and etc.)
 - 2D platform side scrolling game (feed yourself and prey & predator)
 - b) In personal Computer

1.2 Current System and Limitation

There are multi of animal games promote in market to fulfill customer demand. Five different types of previous system was taken to make a comparison. Those systems can be either play on personal computer, smart phone or tablet. Animal games were program in multi-platform such as in iOS, android or online game. In order to produce better game performance with visual reality, the combination of different type of media such a text, video, sound, computer graphic and animation is essential. Those existing animal game present in 2D animation with animal image to brief descript of the animal characteristic and feature. Slide and touch action as interaction of the games between the user and the devices. In order to implemented game in an interaction way action such as drag and drop, coloring with using controller (mouse, keyboard) or touch pad while playing the game to enhance the game in much more interested and interactive. Interactive games bring much joyful compared with conventional reading materials (books, newspapers). Various platform of existing game are San Diego Zoo Kids, Switch Zoo, AniWorld, Puzzles HD and Animal Game were use as comparison. Improvement will be implement in my Educational Animal Game for Kindergarten game.

1.2.1 San Diego Zoo Kids

San Diego Zoo Kids is a free online game, which also enable install via apple store and android market. San Diego Zoo really exist which located in Balboa Park, San Diego. From the website of San Diego Zoo, it also include the animal game to make the website more on human interactive and creative. San Diego Zoo Kid is a 2D game. San Diego Zoo Kids provides different parts of the game which are Tiger Trail, Your Doodles for painting, drawing, safari park adventure, elephant Odyssey, and Polar Bear Plunge and so on. There contain sub game from each main game in proper arrangement, classification and differentiation. Player can go through the game level by level, with different kind of animal and study animal habitat. The main page contain six button to link with the sub webpage. The buttons list are kids home, animals, games, animal cams & videos, jobs at the zoo and activities. Besides that, animal is category from amphibians, bird, arthropods, mammals and reptiles. This may avoid from confusing. San Diego Zoo Kids is present in animation way. Furthermore, sound effect is displaying to immerse the game with the zoo environment.

GUI of San Diego Zoo Kids is fresh with colorful, that enables attracted children attention from keep on playing. The 2D animals are design in adorable and reality way actually similar with reality animal. All the buttons are differentiate in color to have a clear comparison for children. San Diego Zoo Kids is a human friendly system with the functionality of home icon to back to begin page. Different GUI web page design is carry on to represent different theme of game by photo, 2D image icon or 3D image and etc. Inside the painting and drawing theme of Your Doodles, palette of color, and different of color tool for painting can be easily access from the gallery. GUI of San Diego Zoo Kids design using image and word that bring advance for children to understand and begin to learn while they are playing game.



Figure1.1 San Diego Zoo Kids Main Interface

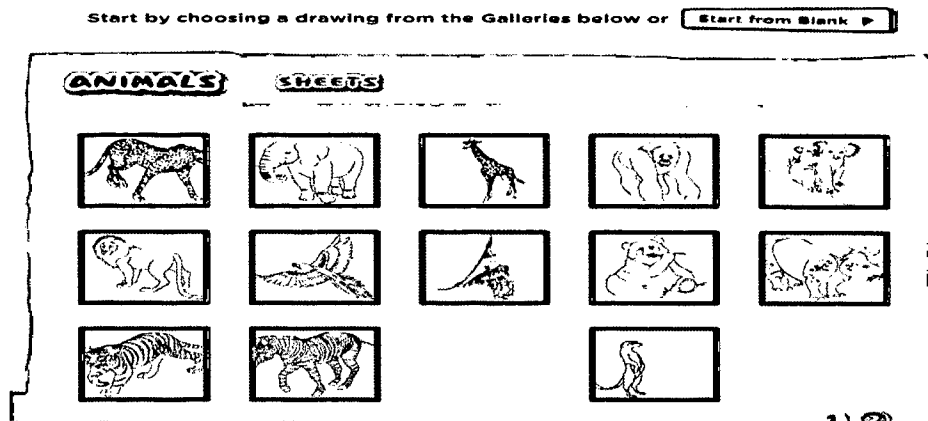


Figure1.2 Your Doogles Interface

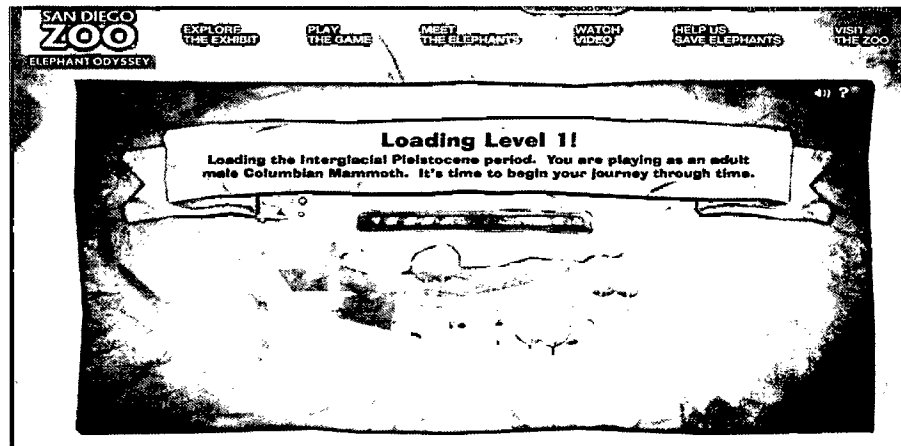


Figure1.3 Elephant Odyssey Interface

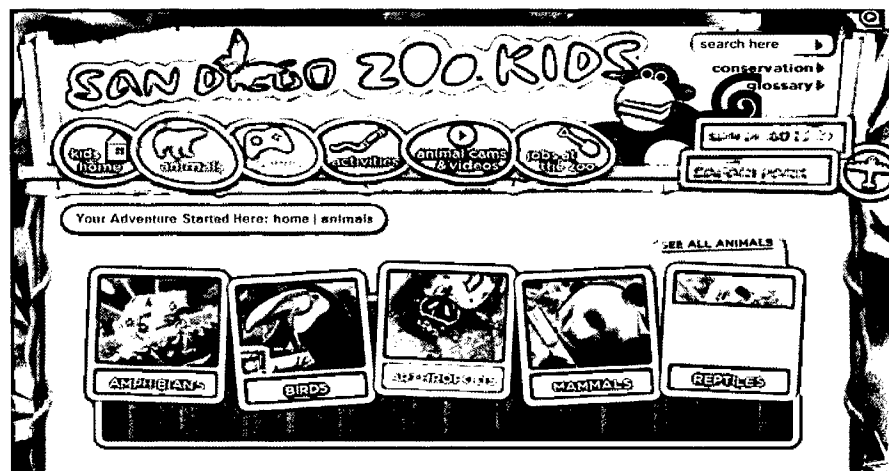


Figure1.4 Animal Home Interface

The attractive of San Diego Zoo Kids graphic can be applied in my project. With proper structure arrangement in word and images, it is convenience for four to six years old children to use the system. Besides that, the 2D images, animation and sound effect are attractive and creative, which can be implementing in current system. This game can be access via <http://kids.sandiegozoo.org/games>.^[9]

1.2.2 Switch Zoo

Switch Zoo provide multi-platforms of installation such as iPod, Android, PC, Mac and Online. Switch Zoo is mainly focus in online game by providing 142 type of free animals, 28 type of free animals is provided for app downloader and payment of \$2.99 is required to purchase whole animal collection. Switch Zoo separate into three parts which are make and play, watch and listen and the last is teach and learn. All the function of learning and teaching are involve in this animal game. Each part of game are used to identify and learn the characteristic of the animal which are present in separately part of sub game such as make new animal, build an online habitat, feeding time, catch the moment, sound match, switch zoo puzzles, switch zoo quest, memory match and where do they live. Switch Zoo is a complete set of education game with divided in multiple part. There separate based on category for ensure the children understand the function of the game with identify more on that animal character and appearance but also the habitat. Besides that, there have reality animal life video with brief description of certain animal detail. In the Teach and Learn section, it contains main four parts of educational games is introduced to learn about animal's characteristics and habitats or even invent new species, Lesson Plans use to spark creativity, Resources is an site for animal research which contain 142 type of animal profile page and Visitors' Pages provides a creativity platform for visitors in animal naming, drawing, stories, poems and comments.

Switch Zoo GUI main on three button to access to main page. Subpage contain of playing game, video display and knowledge learning. Less attractive color is used as GUI interface easily confusing. Identify is difficult to clarify. Besides that, scientific description is hard to understand by children within of four to six years old. This game mainly focus on educational value with providing scientific knowledge. Contain of description is complex

with difficulties word. This formation a view of more word than the image. This scenario cause's user lose the interest to proceed the game after reading the text and description.

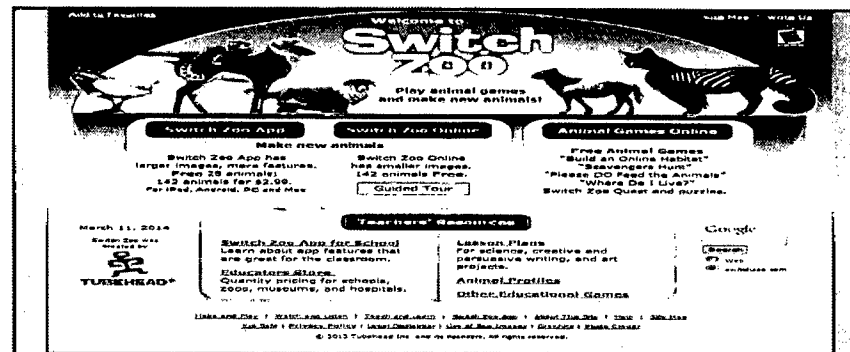


Figure1.5 Main page of Switch Zoo

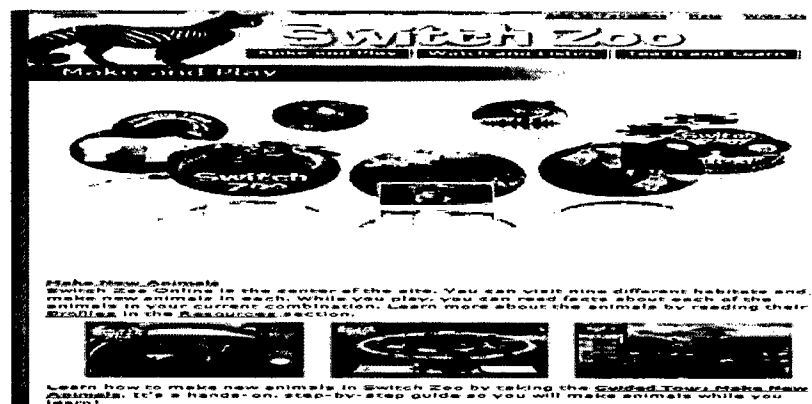


Figure1.6 Make and Play Page of Switch Zoo

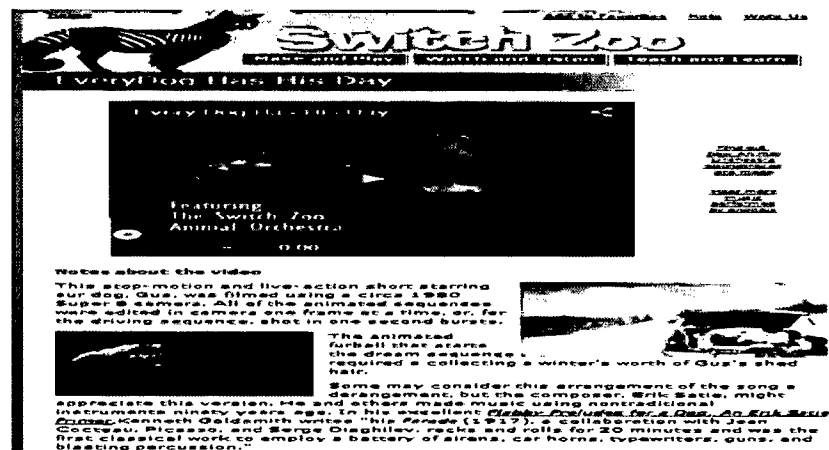


Figure1.7 Watch and Listen page of Switch Zoo

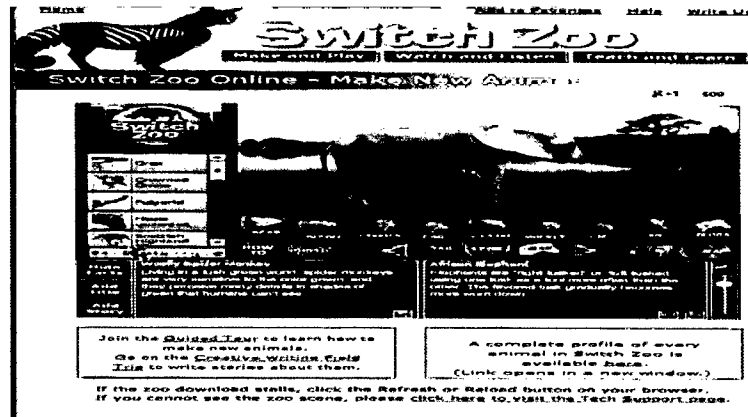


Figure 1.8 Make New Animal (one of the switch zoo online)

The content of Switch Zoo can take as a reference, even though it more on learning. Compact with content of knowledge sharing, video show and platform for creativity can give an idea of the flow of the propose project. Switch Zoo is a bit hard to play by children. Advance can be done to make it easier to handle. Font size can be adjusted. Simple and understanding word can be use. Besides that, the image can be more interesting and colorful that able to attract attention from children. This game can be access via <http://www.switchzoo.com/> [10]

1.2.3 AniWorld

AniWorld is a free Android game. This is an excellent app that develop mainly for kids aged of one to five. AniWorld is an interactive game for kids to build up the interesting for learning more on animals and their habitat. There have 36 kinds of animal picture to select among of 250 animal photos. Animal name were teaching in this game. Besides that, kids have the opportunity to feed animal food and petting via this game. There have four function providing interaction with the animal which are animal home, feed me, pet me and display the image of animal grows. Animal snoring put as a background sound within natural habitat environment. Three kind of food was provided in feed me, “nooo” sound was display to remind the user wrong food is given, animation of feeding will be display when correct food is provided. Pet me is a game to develop an affection with the pet by touching the device surface. Animal feel comfortable with the interaction, joyful of music will be displayed as a feedback from the interaction. The last button is a display the image of development stage

begin with birth until adult. Children have a small learning of animal grow. This game specialist develop to consult the child.

AniWorld's GUI is in simple reality animal image with four button to access the interactive with the animal. Besides that, sound effect and picture change is the key point of the game to carry out the interaction with the animal. This game mainly focus on amusement value rather than learning. Kids love it when see the funny and sound play on. The function is easy to handle by kids, by just click and drag. The animal game present using actual animal image, to avoid from error recognition when kids face with the real animal character.

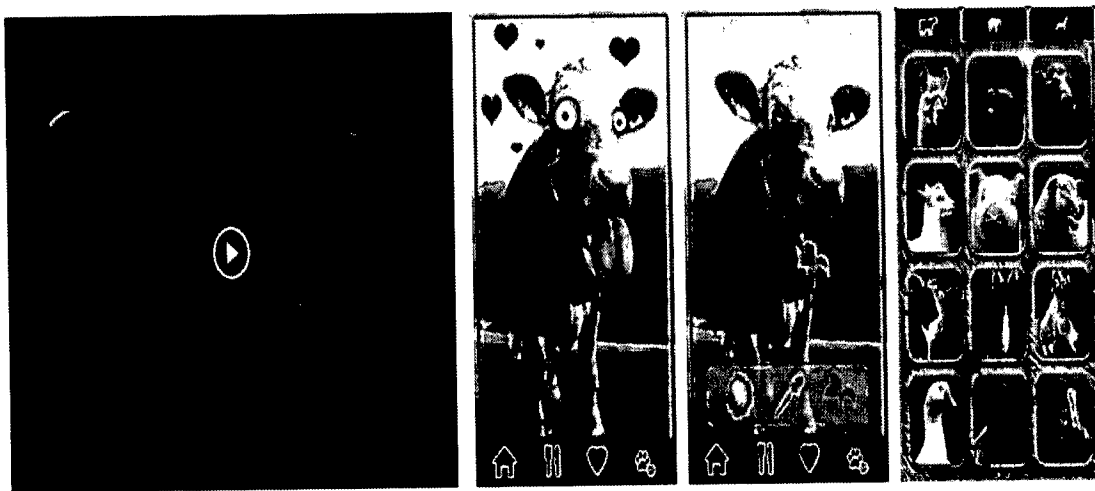


Figure1.9 AniWorld Interface

AniWorld application structure is simple and easily handle. Kids refuse to learn complex thing, with the simple way of fun and the funny output, it make them really want to play and enjoy the game. The advance of using color can be implementing to make the game more visual effect. Besides that, can play 2D effect and add more game for functional. This game can be access via <https://play.google.com/store/apps/details?id=com.aniworld.lite> .^[11]

1.2.4 Puzzles HD

Puzzles HD is an android app that required payment. Puzzles HD is an animated puzzle game for kids within age's two to six. This game contains twelve type of puzzle for kids to play. In order for children to challenge more, level of difficulties become the interesting part of this game. Various cute animals in this puzzle were used such as penguins,

starfish, sharks, whales, bears and so on. Kids sure will love it and feel fun watching the cute animal on the screen when solve the puzzle. Game theme beach, arctic and forest with twelve different of animal puzzles involved in Puzzles HD. Once complete the puzzle, bright and fun animation image will display. A PUZZLE HD is an easy game for kids to use and control. Besides that, it is optimized use for tablets and phone.

Puzzles HD is a 2D image with cartoonist cute animal images character and background. The animal mapping is construct with the specific feature as remind. The color implement is simple and kids make none confuse of that. There have a back button on the bottom of the right hand side to proceed with next game. Different theme in the game is attractive. Furthermore, the display of animation effect as the reward after completing each level of the puzzle, really give positive encouragement for the children to keep on playing the game.

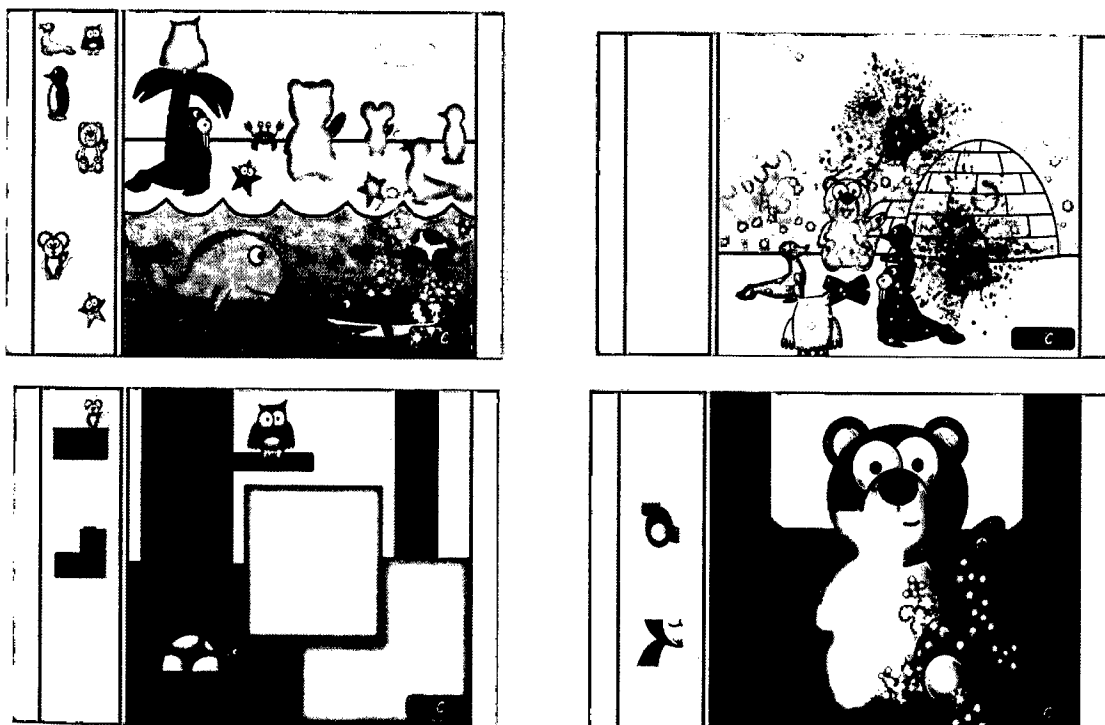


Figure1.10 Puzzles HD interface with beach, arctic and forest theme

A Puzzles HD contain not scoring mechanism. Thus, different level of challenging is recommend to interesting this game in order to build up children interest when play the game.

Puzzle game is none for educational value. It develops to test children responding by observe the quickness of thinking, eye focusing and brain responding. It provided for one to five years old children to assist children grow of nerve of brain. Interactive game enables to stimulate the brain development. This game can be access via

<https://play.google.com/store/apps/details?id=com.orionsmason.animalpuzzlesfree> .^[12]

1.2.5 Animal Game

Animal game is an online website game, it only able to play via the website link of <http://www.animalgame.com/play/index.php>. Animal game carry out in form of Q&A way, few questions will be asked to determine imagine animal character. Players request to answer the question by choosing the answer of yes or no in order to generate the animal name as the game finalist result. The entire question was the same, with the difference answer choosing by the player. The answer was collected to identify and determine the animal feature, attitude and living behavior. From this interactive, children will have better understanding and more interest in learning. No score can achieve but is a fun way to gain knowledge. It is suitable for children as their learning resource, it is easily and convenience to handle and play on.

Animal game GUI is a simple webpage, with plain white as the page background, less colorful and image was used. Four links can be access to the specific page which are restart game, sign in, help and top 10. With the question are given, button of yes or no to collect the data of the player's answer. The name and the image of the animal will display at the end of the game. From the game, player able to learn and imagine the animal character from their view perspective and mind to identify and determine what kind of animal in their mind with the limitation of feature recognized.



Figure1.11 Main page of Animal Game

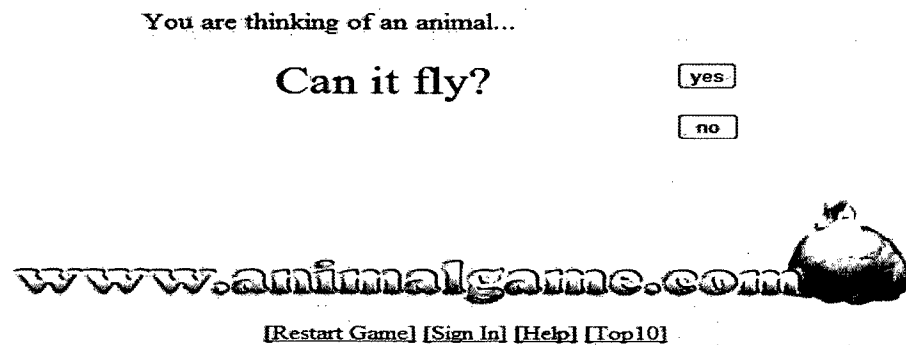


Figure1.12 one of the game question

Registration details have been sent to even_tyw@hotmail.com.
When you receive your password, please sign in.

The Animal Game is free for everyone.
However you must register (that's free too) if you want to add animals to the game.

Registered Users Sign In Here
nickname:
password:

New Users Register Here
choose a
nickname:
email
address:

A password will be mailed to the address you provide.

If you have forgotten your password, fill in only your email address above and your registration details will be emailed to you.



Figure1.13 Page for login and registration